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Adam Mark Weigold

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EXAMINER

LEE, DAVID J

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/989,103

Applicant(s)

WEIGOLD ET AL.

Examiner

David Lee

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-31 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/14/2002</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “point to point network having passive optical transceivers connected to active optical transceivers in a central hub”, “a point to point network having active optical transceivers connected to passive optical transceivers in a central hub”, and the “partially transparent photodetector device” and its corresponding configuration must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 15-21, 26, 28-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 15, the specification does not clearly describe "overmodulating a second signal." What is overmodulation and how is overmodulation accomplished? Therefore, the specification does not enable one skilled in the art to make and use the invention.

Regarding claims 16 and 17, the specification does not clearly describe "modulation between a first non-zero intensity and a second non-zero intensity, and said overmodulation includes attenuating the intensity of second portion between a first attenuation value and a second attenuation value, said attenuation values chosen so that their ratio is different from the ratio of said first and second intensities" and that the "second non-zero intensity is a substantial fraction of said first non-zero intensity, and

said second attenuation value is substantially complete attenuation.” Therefore, the specification does not enable one skilled in the art to make and use the invention.

Regarding claim 20, the specification does not clearly describe the means for removing the modulation applied to the first optical signal from a corresponding electronic signal generated by the photodetector. Clarification is needed without the addition of new subject matter.

Regarding claim 21, the specification lacks detailed structure or description on how the “configuration” (specification, page 9, lines 24-26) should be setup with separate input and output fibers in order for incorporation of the partially transparent photodetector device and therefore disables one of ordinary skill in the art to make and/or use the invention.

Regarding claim 26, the specification does not clearly describe “receiving said optical stream encoded by modulating its intensity between a first non-zero intensity and a second non-zero intensity on the basis of said first data.” Also, the specification does not clearly describe and explain the method of encoding data by attenuating its intensity between a first attenuation value and a second value, so that their ratio is different from the ratio of first and second intensities. Therefore, the specification fails to enable one skilled in the art to follow and apply the method recited in claim 26.

Regarding claims 28-29, the specification lacks any description of a “point to point network having passive optical transceivers connected to active optical transceivers in a central hub” and “a point to point network having active optical

transceivers connected to passive optical transceivers in a central hub" and therefore disables one of ordinary skill in the art to make and/or use the invention.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Albanese et al (US Patent No. 4,712,859).

Regarding claim 1, Albanese teaches a passive optical transceiver for receiving a first optical signal stream (fig. 4,  $\lambda_2$ ) and transmitting a second optical signal stream (fig. 4,  $\lambda_1$ ), including: a photodetector (fig. 4, 349) for detecting a first portion of said first stream; and an optical modulator (fig. 4, 340) for modulating a second portion of said first stream to provide said second stream (fig. 4, 352, 354 – conductors that modulate the stream); wherein said streams are colinear with said photodetector and said modulator (fig. 4, 340 and 349 are collinear).

Regarding claim 2, Albanese teaches a port for receiving said first optical signal stream and transmitting said second optical signal stream (fig. 4, the connection point between the fiber 305 and the modulator 315 is considered a port, and it receives first stream  $\lambda_1 + \lambda_2$  and transmits second stream  $\lambda_1$ ).

Regarding claim 3, Albanese teaches means for reflecting a portion of said first optical signal stream to said optical modulator to provide said second stream (fig. 4, the  $\lambda_1$  dielectric mirror reflects a portion of the stream to the modulator 315).

Regarding claim 4, Albanese teaches that the reflected portion is a constant part of the power of said first optical signal stream (fig. 4, since a dielectric mirror is used to reflect the light, the reflected portion is a constant part of the power).

Regarding claim 5, Albanese teaches that the first portion of said first signal stream has a first wavelength ( $\lambda_1$ ) and said second portion of said first signal stream has a second wavelength ( $\lambda_2$ ), and said reflecting means operates on the basis of wavelength division (col. 7, lines 56-58, and fig. 4, the dielectric mirror 347 divides the two wavelengths by reflecting  $\lambda_1$  and transmitting  $\lambda_2$ ).

Regarding claim 8, Albanese teaches that said first signal passes through said modulator in a first direction (fig. 4,  $\lambda_2$  propagates through modulator toward the right), and the reflected portion of said first signal passes through said modulator in a second direction (fig. 4, after being reflected by dielectric mirror 347,  $\lambda_1$  propagates through modulator toward the left), and said modulator passes said first signal in said first direction substantially unmodulated (fig. 4, the first signal  $\lambda_2$  already has data modulated on it, and passes through the modulator unmodulated, and is detected by the photodetector 349. see also col. 7, lines 34-37).

Regarding claim 22, Albanese teaches an optical transceiver including: an input/output port for receiving a first optical signal stream and transmitting a second optical signal stream (fig. 4, the connection point between the fiber 305 and the

modulator 315 is considered a port, and it receives  $\lambda_1 + \lambda_2$  and transmits  $\lambda_1$ ); a photodetector (fig. 4, 349); an optical modulator for passing said streams and for modulating said second stream in response to a modulation signal (fig. 4, 349, and col. 7, lines 65-68); and a reflector for passing said first stream for detection by said photodetector and for partially reflecting said first stream to said optical modulator to provide said second stream (fig. 4 –  $\lambda_1$  dielectric mirror).

Regarding claim 23, Albanese teaches that the first stream is in one direction (fig. 4,  $\lambda_1(\text{cw}) + \lambda_2$  propagates on fiber 305) and said second stream is in an opposite direction (fig. 4,  $\lambda_1$  propagates on fiber 305 in the opposite direction).

Regarding claims 24 and 25, Albanese teaches a passive optical transceiver, including an optical modulator (fig. 4, 315), a partially reflective mirror (fig. 4 –  $\lambda_1$  dielectric mirror), and a photodetector (fig. 4, 349), said mirror, modulator and photodetector arranged to be substantially coaxial with the axis of light propagation through said transceiver (fig. 4, the modulator 315, the dielectric mirror and the photodetector 349 are substantially coaxial with the axis of light propagation), and configured so that light entering the transceiver passes through the modulator to the mirror (fig. 4, light passes from modulator 315 to dielectric mirror), where a portion of said light is transmitted through the mirror to the photodetector (the dielectric mirror passes a portion of the light,  $\lambda_2$ , to the photodetector), and another portion of said light is reflected by the mirror (fig. 4, the dielectric mirror reflects  $\lambda_1$ ), is modulated by the modulator (fig. 4, conductors 352 and 354 modulate the light), and is transmitted from said transceiver (the light  $\lambda_1$  is transmitted on fiber 305).



Regarding claim 27, Albanese teaches an optical network including at least one optical transceiver as claimed in claim 1 (col. 1, lines 5-6).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albanese in view of Avicola (US Patent No. 4,649,529).

Regarding claim 6, Albanese teaches all the limitations as applied to claims 1 and 3 above except for the limitation that the reflecting means is switchable to reflect a portion of said first stream on the basis of time division. Avicola teaches that a reflecting means is switchable to reflect a portion of said first stream on the basis of time division (col. 4, lines 12-19). One of ordinary skill in the art at the time of invention would have been motivated to use a switchable reflecting means with time division in order to provide fast, efficient, and economical means of communicating data. Therefore it would have been obvious to one of ordinary skill at the time of invention to incorporate a switchable reflecting means as indicated by Avicola in the system of Albanese.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albanese in view of Horiuchi et al. (US Patent No. 5,726,789).

Regarding claim 7, Albanese teaches all the limitations as applied to claim 1 except for the limitation that the modulator is switchable to modulate a portion of said first stream on the basis of time division. Horiuchi discloses a modulator which uses time-division multiplexing to multiplex optical streams (col. 3, lines 20-25). One of ordinary skill in the art at the time of invention would have been motivated to use a time division multiplexing modulator as indicated by Horiuchi in the system of Albanese in order to provide an economical and efficient modulator. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the time division based modulator of Horiuchi in the system of Albanese.

9. Claims 9-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albanese in view of Ishikawa et al. (US Patent No. 5,361,157).

Regarding claim 9, Albanese teaches all the limitations as applied to claims 1, 3, and 8 above, except for the limitation that the modulator splits the streams and phase shifts at least one of the split streams and detects them at spatially distinct locations, and detects the stream substantially independent of phase shifting. Ishikawa discloses a modulator (fig. 5A) which includes arms for splitting said first optical signal stream into split signal streams (fig. 5A, stream 22A and stream 22B), phase shifting at least one of the split signal streams (col. 8, lines 65-66), independently transporting the split signal streams for detection at spatially distinct locations (fig. 5A, 25, and see also col. 9, lines

19-21), and detecting said first optical signal stream substantially independent of said phase shifting (col. 9, lines 22-23). One of ordinary skill in the art at the time of invention would have been motivated to use the modulator as indicated by Ishikawa for the modulator of Albanese in order to provide simple and economical implementation and to allow the benefit of obtaining a very high extinction ratio. Therefore one of ordinary skill in the art at the time of invention would have been motivated to incorporate the modulator as indicated by Ishikawa in the system of Albanese.

Regarding claim 10, Ishikawa discloses that the split signal streams are detected at spatially distinct locations (fig. 5A, 25, and see also col. 9, lines 19-21).

Regarding claim 11, Ishikawa discloses that each of the split signal streams is detected by a respective photodetector (fig. 5A, 25, and see also col. 9, lines 19-21).

Regarding claim 12, Ishikawa discloses that the modulator includes a first arm for inducing a positive phase shift and a second arm for inducing a negative phase shift (col. 9, line 10: it is disclosed that the modulator can produce opposite phase in each arm, which implies a negative and a positive phase).

Regarding claim 13, Albanese teaches all the limitations as applied to claim 1, 3, and 8 except for the limitation that the modulator operates on the basis of a difference in polarization between said first optical stream and said reflected portion. Ishikawa teaches that the modulator operates on the basis of a difference in polarization between said first optical stream and said reflected portion (see col. 2, lines 21-25, lines 35-39). One of ordinary skill in the art at the time of invention would have been motivated to use a modulator operated with polarization as indicated by Ishikawa in the system of

Albanese because polarization modulation improves signal-to-noise ratio in response and offers a higher degree of sensitivity. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate a polarization operated modulator as indicated by Ishikawa in the system of Albanese.

10. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albanese in view of Hansen et al. (US Patent No. 4,385,350).

Regarding claims 30 and 31, Albanese teaches all the limitations as applied to claim 1 except for the limitation that the transceiver is part of a computer bus architecture. Hansen teaches a computer bus architecture (col. 4, line 15). One of ordinary skill in the art at the time of invention would have been motivated to incorporate the transceiver of Albanese in a computer bus architecture such as the one of Hansen because bus architectures provide interface commonality, modularity, signal line efficiency, and easy expandability. Therefore one of ordinary skill in the art at the time of invention would have been motivated to use the transceiver of Albanese in a bus architecture such as the one of Hansen.

11. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lee

  
**M. R. SEDIGHIAN**  
**PRIMARY EXAMINER**